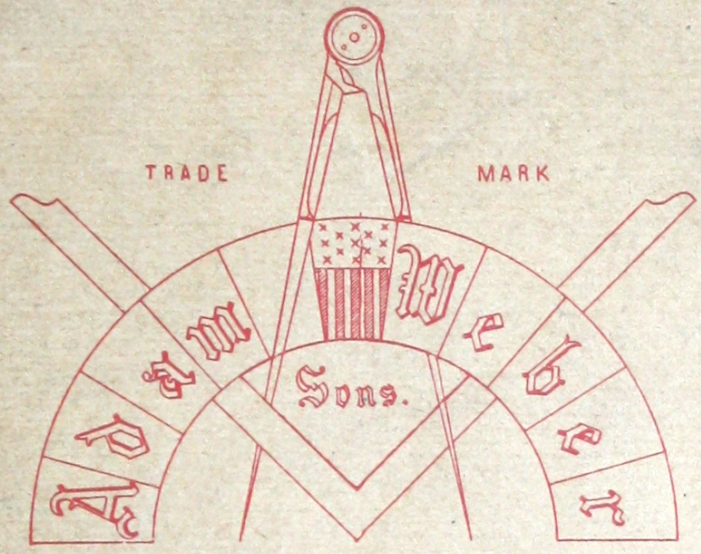
Adam Weber Sons.



NEW YORK CITY

DESIGNERS AND BUILDERS

... OF ...

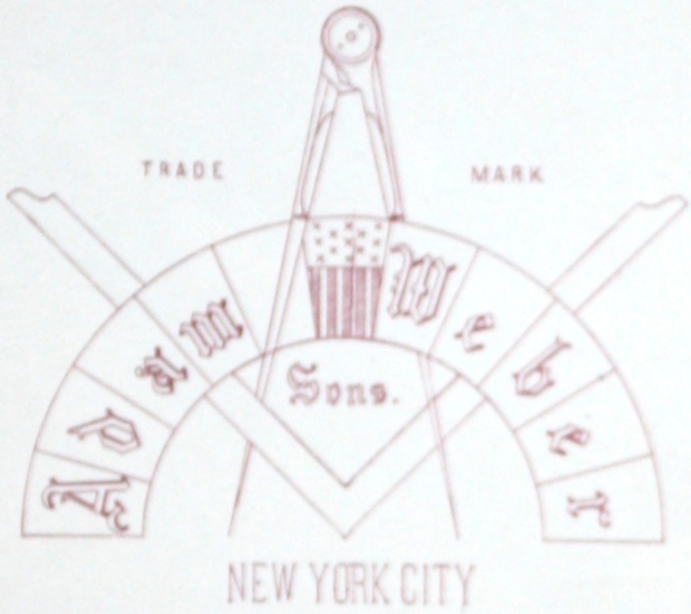
CHIMNEYS OF PERFORATED RADIAL BLOCKS.

Adam Weber Sons.

Manhattan Fire Brick and Enameled Clay Retort Works,

CHIMNEY CONSTRUCTION DEPARTMENT.

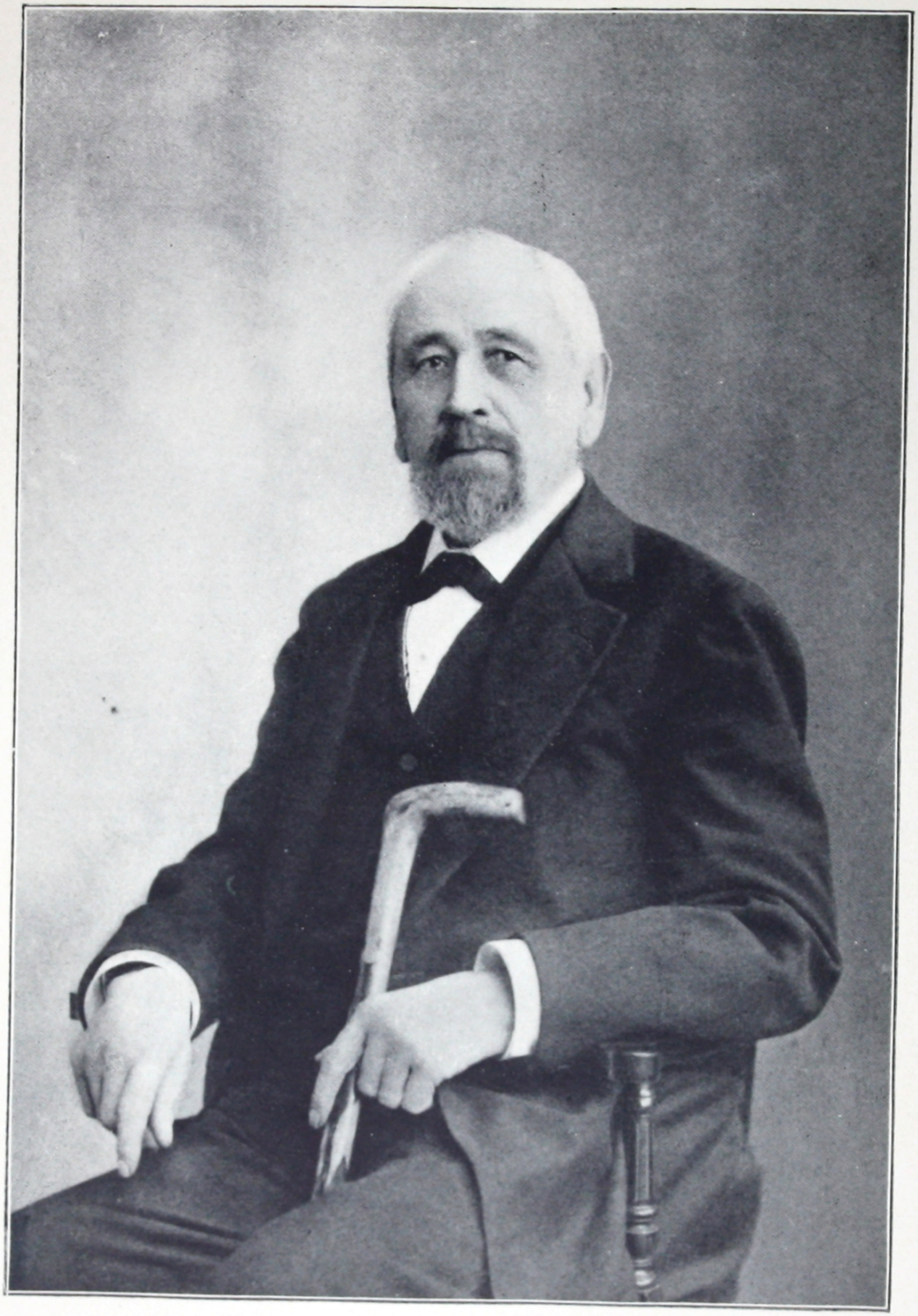
Long Distance Telephone.



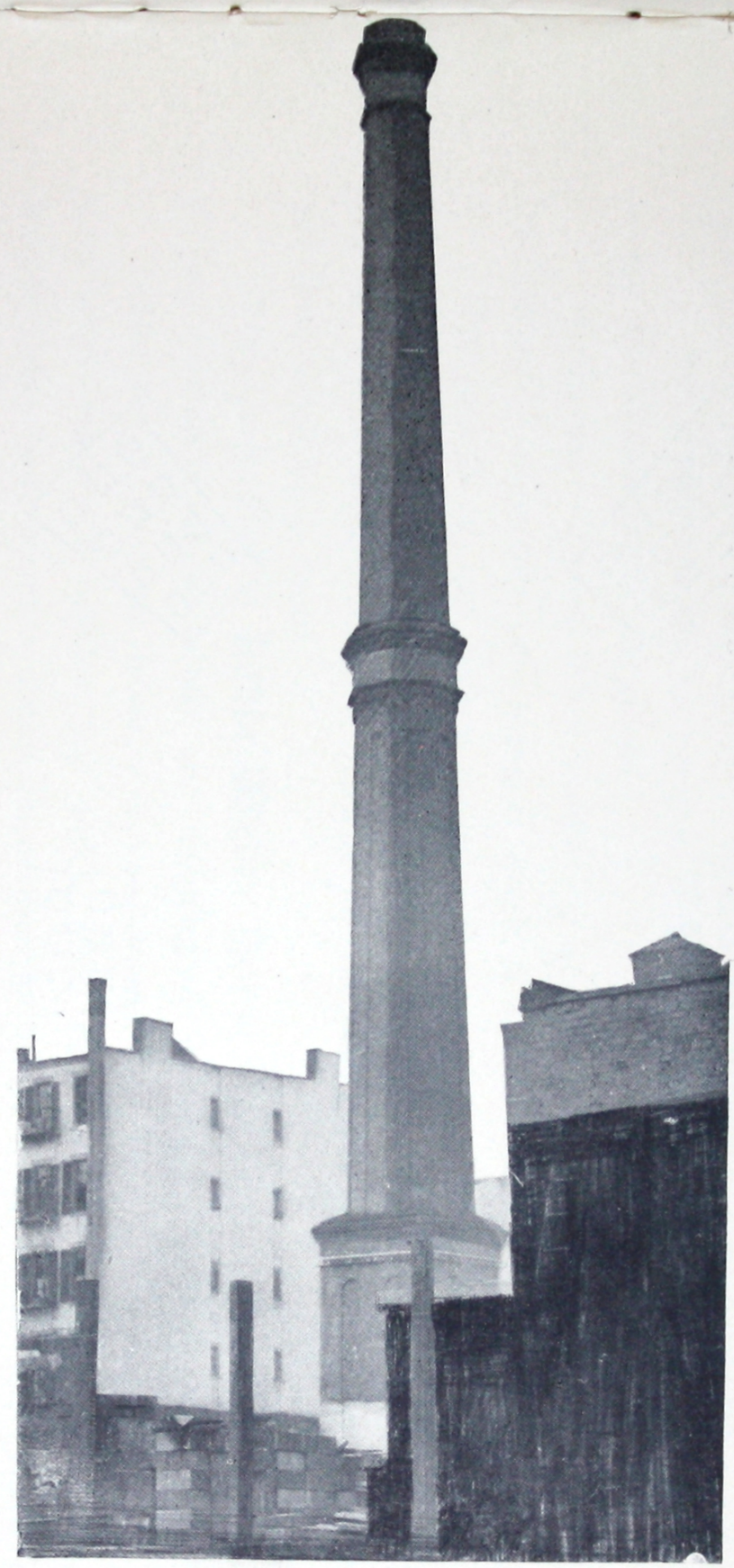
Cable Address,
WEBER, New York.

Works at WEBER, on the Raritan River,
Middlesex County, New Jersey.

MAIN OFFICE AND DEPOT,
No. 633 East 15th Street, New York City.

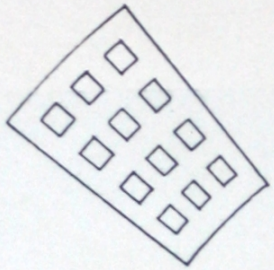
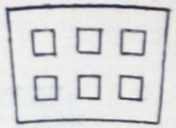
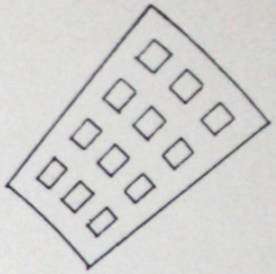


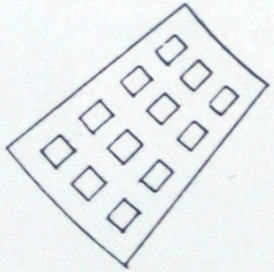
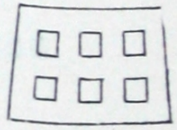
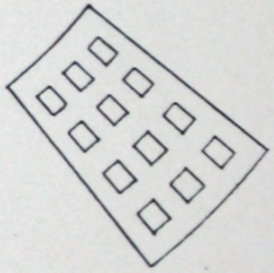
ADAM WEBER, pioneer of the Fire Brick Industry in the United States of America, founder of the Corporation of **Adam Weber Sons.**



Photograph of Chimney, designed personally by Adam Weber, and erected under his personal supervision in 1863, at No. 633 East 15th Street, being the first Fire Brick Factory in the United States—an old landmark of New York City.

Flue, 38 inches internal diameter at top.
Chimney, 155 feet above the ground.

Perforated Radial Chimney Blocks.

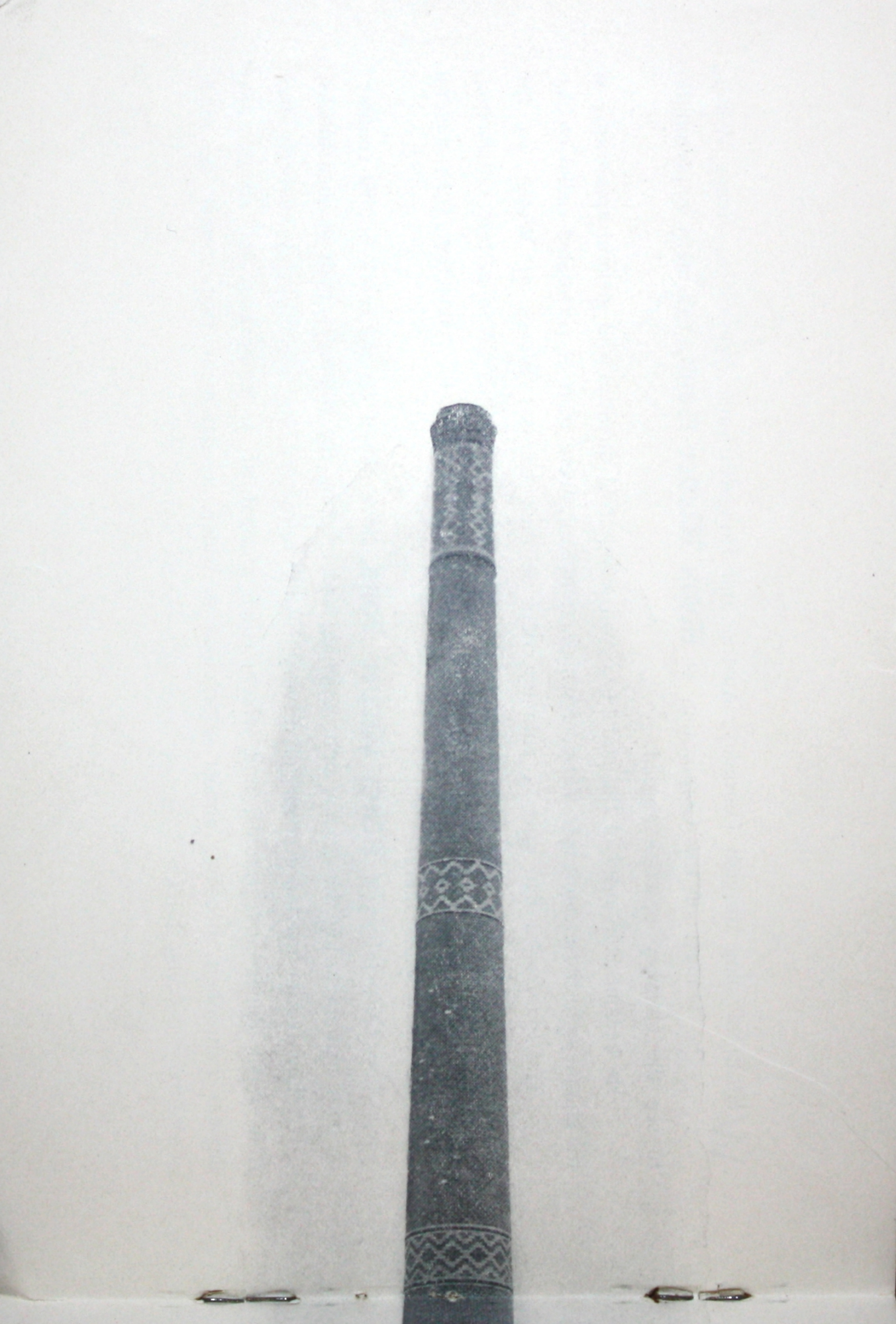
WHILE traveling through Germany, Austria and Hungary, some years ago, Adam Weber, the founder of the Corporation of **Adam Weber Sons,** had many opportunities to see the chimney practice abroad.

He became convinced of the stability, good weathering qualities and general appearance of the chimneys in those countries, many of which, if not all, were built of perforated radial blocks.

The *result*—he had such a chimney built at their colossal Works at Weber, on the Raritan River, Middlesex County, New Jersey, in 1893, which has given perfect satisfaction, and he is now about erecting a duplicate of the first, for use in connection with several new Fire Brick kilns there.

The Corporation of **Adam Weber Sons,** have taken up the work in this country, of both manufacturing the blocks, and designing and erecting the chimneys built of such blocks.

The blocks used are made of a very highly refractory and smooth clay, entirely free from small stones and pebbles, and which, when burned, at a temperature of about 2,000 degrees Fahrenheit, becomes almost impervious to water, a statement that cannot be made of ordinary building brick.



Photograph of the Chimney at the Works of **Adam Weber Sons,** Weber, New Jersey, built of perforated radial blocks, after the designs of Mr. Adam Weber, and erected under his personal supervision in 1893.

Flue, 5 feet internal diameter at top,
Chimney 180 feet above ground.
Underground Flues.

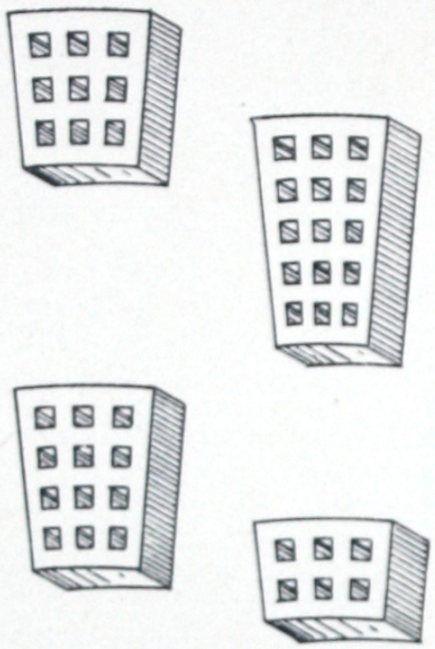


Fig. 1.

THEY are also of large face, thus presenting fewer joints to the weather, and to the gases, and the blocks are made radial, thereby leaving no large pockets to be filled up by mortar.

Vertically, the blocks are pierced with square holes, as in Figure 1—which gives not only a series of air spaces but also greater compressive strength, since it has been proved, by actual test, that blocks so *perforated*, have a greater total compressive strength than a *solid* brick of the same outside dimensions, and of the same material and baking.

The core or flue interior is also much smoother than in a chimney built of ordinary red brick, and, consequently, there is less friction of the gases passing through the flue.

The high temperature at which our blocks are burned, enables a chimney built of them to be used without a lining for gases, the temperature of which does not exceed 550 to 570 degrees Fahrenheit.

For higher temperatures, a lining of Fire Brick should be used.

A CHIMNEY built of our perforated radial blocks can be laid up from the outside with ease, even while that part of the chimney already built is being used, facilitating the heightening of old chimneys without difficulty. (Most chimneys of ordinary red brick are built from inside the flue.)

Pattern effects in different colors may be produced, as the face of the block and an inch or more back from the face may be easily colored to suit the buyer before the blocks are burned.

Also the entire structure may be given any desired color, so as to harmonize with the Architect's or Engineer's color scheme of a group of buildings.

See illustration in centre of this booklet, of the chimney at our Works, at Weber, on the Raritan River, Middlesex County, New Jersey.

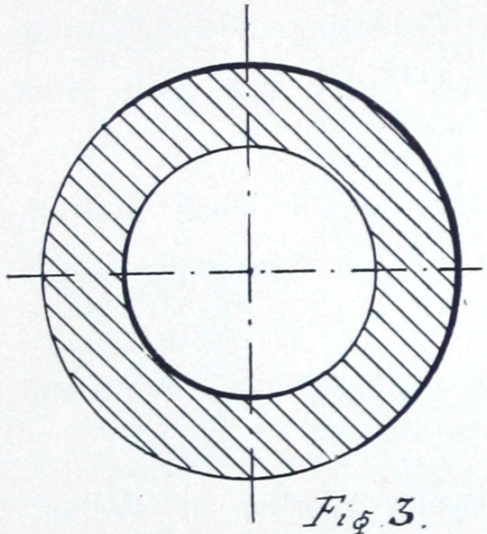


Fig 3.

THE circular cross section, Figure 3, is used in our method of construction. *First*—because it is the strongest section that can be built with a given amount of material, and give the greatest internal area for that amount of material.

Second—the circular shape is best suited to the flow of the gases, there being less friction than in any other shaped flue of an equivalent area.

Third—the circular shape receives from the wind less total pressure than any other cross-section, it being only about one-half of what it would be on a square whose side l is equal to the circular diameter l, Figure 4.

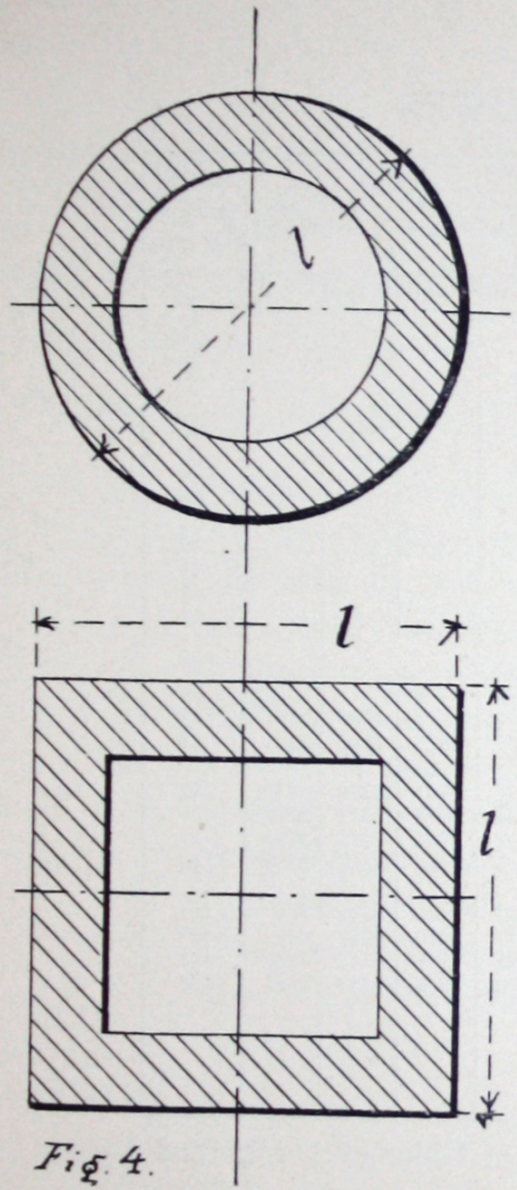


Fig. 4.

IT has been found from a large number of tests with telescopic chimneys that the following are the best proportional heights of chimneys for various coals:

75 feet high for free burning bituminous coal.

100 feet high for burning bituminous slack.

115 feet high for slow burning bituminous coal.

125 to 150 feet high for anthracite coal.

It has been found that when ratio of height to diameter of flue is near 25 feet, the chimney is best suited for bituminous coal, while for anthracite coal a ratio of 30 feet or over, is needed to produce a good draft.

The table on the following page will give an idea as to what size of chimney you may need, and be of use to those who receive this booklet.

To ascertain the "coal capacity" of a chimney, with any size flue, multiply the boiler horse-power as given in the table for a certain diameter and height by 4.

CHIMNEY TABLE—BOILER HORSE-POWER.

DIAM.	AREA	HEIGHT OF CHIMNEY.													EQUIV.
	(A)	50′	60′	70′	80′	90′	100′	110′	125′	150′	175′	200′	225′	250′	300′	Sq. Chim.
Inches.	Sq. Ft.	Horse Power = 3.25 $A\sqrt{H}$; 4 lbs. of coal burned considered 1 H. P.														Side of Sq.
18	1.77	42	46	49	52											16″
21	2.41	55	62	65	68											19
24	3.14	72	78	85	91	98										22
27	3.98	91	101	107	114	124										24
30	4.91	114	124	133	143	153	159									27
33	5.94		149	163	172	182	192	202								30
36	7.07		179	192	205	218	228	241	257							32
39	8.30			224	241	257	270	283	302							35
42	9.62			263	282	296	312	332	351	390						38
48	12.57				364	387	410	429	458	510						43
54	15.90					491	517	543	579	647	683					48
60	19.64					605	637	669	715	797	845					54
66	23.76						774	809	865	965	1021	1092				59
72	28.27						920	962	1051	1147	1215	1300	1378			64
78	33.18							1131	1206	1349	1459	1524	1619	1706		70
84	38.48							1310	1401	1563	1654	1768	1875	1976	2165	75
90	44.18								1609	1794	1898	2031	2155	2269	2486	80
96	50.27								1830	2041	2161	2311	2451	2584	2831	86
102	56.75								2067	2304	2434	2607	2766	2915	3195	91
108	63.62								2314	2584	2734	2925	3101	3269	3578	96
114	70.88									2879	3045	3257	3455	3643	3991	101
120	78.54									3191	3374	3611	3829	4037	4420	107
132	95.03									3861	4082	4368	4631	4882	5350	117
144	113.10									4596	4859	5200	5515	5811	6367	128

By permission of William Wallace Christie, Paterson, New Jersey, author of Chimney Design and Theory.

THERE are, in Europe, thousands of chimneys built on our plan of all diameters and heights.

There are but a few in this country—we have orders on hand at present for a number, and will cheerfully submit plans and prices to any who are thinking of building chimneys, if they will kindly send us the necessary facts, when communicating, by replying to the following interrogatories as appended below, viz:

Height of Chimney.....
Internal top diameter.....
Character of Soil.....
How many flue openings.....
Is there an underground flue?.....
Is there an overhead flue?.....
Location of flue openings.....
Character of coal used.....
Amount burned per hour.....
Area—total—of grate surface.....
If chimney is to be used with kiln.....
Quantity of fuel burned per hour.....
Character of fuel.....

Adam Weber Sons.

Manhattan Fire Brick and Enameled Clay Retort Works.

Works at WEBER on the Raritan River, Middlesex County, New Jersey.

Main Office and Depot, - - No. 633 East 15th Street, New York City.

* * *

High Grade Fire Brick and Cupola Brick of all shapes and sizes.

Fire Clay Retorts for Gas and Sugar Houses.

Modern Recuperative Furnaces, for Firing Gas Retort Benches, Bone Black Kilns, Lime Kilns, Coke Ovens and Steam Boilers with Gaseous Fuel.

GROUND FIRE CLAY MORTAR, GROUND FIRE CLAY, GROUND FIRE BRICK.

Miners and Shippers of Foundry Fire Clay, Kaolin, Fire Sand, fine and course, of superior quality from our own mines.